Water Pollution Control Plant
(ECA # 0589-AXZPCW)

2018 - PERFORMANCE REPORT

322 Water Street
Deseronto, Ontario
K0K 1X0

March 2019

Executive Summary

The Deseronto Water Pollution Control Plant performed very well throughout 2018. Effluent quality from the process consistently complied with the prescribed limits in the Ministry of the Environment and Climate Change issued Environmental Compliance Approval #0589-AXZPCW (ECA).

An extreme localized precipitation event caused significant flooding throughout the Town and overwhelmed the capacity of the wastewater collection system in early June. More than 7000 m^3 of diluted wastewater bypassed the treatment process while the WPCP operated at peak capacity. Process effluent quality was marginally degraded during the bypass event however the monthly average pollutant concentrations and loadings remained compliant.

A total of 2240 m^3 of liquid biosolids and 107 tonnes of dewatered biosolid material were beneficially applied to agricultural land during June, August, October, and November of 2018. The land application program was conducted by Terratec Environmental in accordance with the requirements of the Nutrient Management Act.

Upgrades to the wastewater system over the past year included new electrical services to two of three sewage pumping stations, the provision of emergency power at those stations, and complete refurbishment of the First Street Lift Station.

1 Introduction

The Deseronto Water Pollution Control Plant treats wastewater from the Town of Deseronto and from the eastern serviced area of the neighbouring Tyendinaga Mohawk Territory. Originally constructed in the early 1970's, the aging facility underwent extensive upgrading and expansion throughout 2015 with the new process fully operational since January 2016. The data presented in this annual report reflects the third year of operation of the upgraded facility.

2 Flow Monitoring Data Summary

The total volume of wastewater treated during 2018 decreased by approximately 10 percent when compared to 2017. The decrease is attributed to lower annual precipitation and lower water table conditions reducing the impact of inflow and infiltration of storm and ground water into the sanitary collection systems.

Table 1 - Flow Data

Month	Treated Flow			
	Total (m^3)	Average (m^3/day)	Maximum (m^3/day)	Minimum (m^3/day)
January	57458	1853	7054	939
February	55925	1997	5639	1070
March	44919	1449	2079	1095
April	71770	2392	6066	1389
May	38474	1241	1705	903
June	51737	1725	7305	840
July	23947	772	1173	650
August	30958	999	1881	732
September	25943	865	1220	728
October	31195	1006	1636	761
November	48922	1631	4988	1052
December	55980	1806	4255	1084
Year Total	537228			
Average		**1478**		
Min / Max			**7305**	650
Design* ADF/Peak		**2,400 / 10,050**		

* Design ADF/Peak refers to the design average day and peak flow capacities of the upgraded facility

Average day flow was 1478 m^3/d, representing approximately 62 percent of the design rated average day flow capacity of 2400 m^3/d. The maximum day treated flow in 2018 was approximately 70% of the peak capacity.

Calibration of all flow monitoring equipment was completed in August by Franklin Empire.

Bypass / Overflow Events: Two overflow events were reported during 2018; the first occurring on April 16th and the second occurring on June 1st and 2nd.

On April 16th, a significant rainfall event occurred, causing influent flow to increase rapidly beyond the set-point limit of the raw sewage pumps. The pump speed was limited to avoid overloading the headworks screen with rapid flow changes. The pump speed was immediately increased by the on-call operator however a volume of 1 m^3 was measured on the overflow meter before the adjustment. A sample of the bypass could not be collected due to the short duration.

During the evening hours of June 1st, an extreme localized storm took place dumping a reported 90mm of rainfall in approximately 90 minutes. The wastewater plant was overwhelmed with excessive inflow and infiltration entering the collection system through manhole structures, improperly connected sump pumps and roof leaders.

The quality of the wastewater plant effluent was monitored during the overflow event. The analytical results are provided in Table 2.

Table 2 – Bypass Data

Dates	Volume (m^3)	*E. Coli.* (cfu/100mL)	CBOD5 (mg/L)	TSS (mg/L)	TP (mg/L)	TKN (mg/L)	TAN (mg/L)	pH
June 1,2	7264	1800	3	22	0.40	6.1	3.79	7.2
Month		4.5	2.2	6.8	0.12	1.9	0.83	7.3
ECA Limit		200	15	15	0.20	n/a	8 / 16	6.0 – 9.5
ECA Obj.		100	10	10	0.15	n/a	5 / 12	6.5 – 8.5

Although values reported for E. Coli., total suspended solids, and total phosphorus during the event exceeded the ECA limits, monthly average values remained compliant. The bypass events were reported to the Spills Action Centre and local Health Unit.

To decrease inflow and infiltration:

- Manhole sealing dishes have been installed in low elevation areas.
- The collection system is flushed and inspected every three years to identify problem areas.
- Manhole structures are inspected and repaired as needed.
- The Town has applied for funding to upgrade the infrastructure on College St.

3 Analytical Monitoring Data Summary

Indicators used to determine treatment process efficiency and regulatory compliance include: the five-day carbonaceous biochemical oxygen demand ($CBOD_5$), total suspended solids (TSS), total phosphorus (TP), total ammonia nitrogen (TAN), pH, *Escherichia Coliforms* (*E.Coli*.), and Rainbow Trout / *Daphnia Magna* lethality testing. The ECA for the plant prescribes effluent limits and objectives for the above noted parameters. All required monitoring for 2018 was completed. The 2019 monitoring schedule is attached as Appendix A.

Effluent quality that meets the ECA effluent objectives indicates optimal process performance. Operators strive to achieve the effluent objectives by active solids control (i.e. waste activated sludge schedule, step-feed under high flow conditions) and by making appropriate adjustments to chemical dosages based on current analytical test results.

$CBOD_5$ & TSS: Samples of raw sewage and final effluent are collected weekly and submitted to an accredited laboratory for analysis. A summary of BOD_5, $CBOD_5$, and TSS concentrations in raw sewage entering the plant and in effluent discharged to the Bay of Quinte is provided as Table 3.

Raw sewage entering the plant during 2018 was of relatively low strength, having BOD_5 and TSS concentrations averaging 114 mg/L and 159 mg/L respectively. Based on monthly averages, the calculated rates of pollutant removal through the treatment process

ranged from 96 to 99 percent for BOD_5 and from 94 to 99 percent for total suspended solids. Removal efficiency is consistent with that observed in previous years.

Non-compliance with respect to $CBOD_5$ and TSS is deemed to have occurred when the monthly arithmetic mean of all sample results exceeds the ECA concentration or loading limits. Monthly average $CBOD_5$ and TSS values remained compliant throughout 2018.

Effluent objectives reflect quality that exceeds that required for compliance and indicates optimal performance of the treatment process. Based on 2018 monthly averages, effluent concentration consistently met the ECA objective for both $CBOD_5$ and TSS.

Table 3 - $CBOD_5$ and Total Suspended Solids Data

Month	BOD_5 / $CBOD_5$				Total Suspended Solids			
	Raw Sewage (mg/L)	Final Effluent (mg/L)	(kg/d)	Removal %	Raw Sewage (mg/L)	Final Effluent (mg/L)	(kg/d)	Removal %
January	86	2.0	3.7	97.7	139	5.1	9.5	96.3
February	80	2.0	4.0	97.5	158	5.8	11.6	96.3
March	90	2.0	2.9	97.8	144	4.8	7.0	96.7
April	55	2.0	4.8	96.3	97	5.9	14.1	93.9
May	74	2.0	2.5	97.3	190	4.7	5.9	97.5
June	71	2.2	3.8	96.9	128	4.6	7.9	96.4
July	170	2.0	1.5	98.8	184	2.2	1.7	98.8
August	161	2.0	2.0	98.8	187	1.7	1.7	99.1
September	168	2.3	1.9	98.7	177	1.3	1.2	99.2
October	170	2.2	2.2	98.7	170	1.7	1.7	99.0
November	136	3.3	5.3	97.6	155	2.1	3.5	98.6
December	102	3.0	5.4	97.0	182	2.7	4.8	98.5
Yr. Avg.	114	2.2	3.3		159	3.6	5.9	
Max. Mo. Avg.		3.0	5.4			5.9	14.1	
ECA Limit		15	60			15	60	
ECA Objective		10				10		

NOTES: **Results represent monthly averages of samples collected at least weekly**

Phosphorus: Phosphorous is removed from raw sewage in the treatment process by chemical precipitation (alum addition), and by enhanced solids removal in the tertiary filter. Total phosphorus concentration and loading as well as alum dosages measured monthly through 2018 are summarized in Table 4.

Non-compliance is deemed to have occurred when the monthly average total phosphorus (TP) concentration or loading exceeds the prescribed limits. During 2018, effluent TP concentration remained compliant with the ECA concentration limit of 0.2 mg/L and also below the more stringent objective concentration of 0.15 mg/L. Consistent optimal process performance was demonstrated as removal efficiency ranged from 97 to 99 percent throughout 2018. Similarly, effluent TP loading remained below the ECA limit.

Alum Dosage: Average alum dosage to the secondary process was 44 mg/L, representing an approximate 7 percent increase from 2017 (41 mg/L). The 2018 annual average dosage to the tertiary process was decreased by approximately 30 percent when compared to 2017. Total alum dosage (secondary + tertiary) was relatively consistent, averaging 57 mg/L versus 59 mg/L in 2017.

Table 4 - Phosphorus Data

Month	Total Phosphorus				Secondary Alum		Tertiary Alum		Total Alum
	Raw Sewage (mg/L)	Final Eff. (mg/L)	Final Eff. (kg/d)	Removal %	Volume (mg/L)	Dosage (mg/L)	Volume (mg/L)	Dosage (mg/L)	Dosage (mg/L)
January	3.48	0.08	0.14	97.8	4164	45.7	1419	15.8	61.5
February	4.21	0.06	0.12	98.6	4141	46.2	1477	17.2	63.4
March	3.16	0.06	0.08	98.2	3294	45.9	1369	19.4	65.3
April	2.21	0.05	0.11	98.0	5175	44.5	1727	15.5	60.0
May	2.95	0.05	0.07	98.2	2775	44.3	904	14.4	58.7
June	2.98	0.12	0.20	96.1	3552	42.0	904	10.7	52.7
July	5.24	0.03	0.03	99.4	1784	44.3	448	10.8	55.1
August	4.91	0.04	0.03	99.3	2209	42.9	556	10.9	53.8
September	5.11	0.03	0.03	99.4	1844	42.4	419	9.7	52.1
October	5.82	0.03	0.03	99.5	2220	41.8	507	9.5	51.3
November	3.76	0.05	0.08	98.7	3934	44.4	801	8.9	53.3
December	3.26	0.02	0.03	99.5	4536	46.0	882	8.9	54.9
Yr. Avg.	3.97	0.05	0.08	98.5	3302	44.2	951	12.6	56.8
Max. Mo. Avg.		0.12	0.20						
ECA Limit		0.2	0.48						
ECA OBJ		0.15							

Nitrogen: Effluent nitrogen is reported in Table 5 as TKN, TAN (total ammonia nitrogen), and also as NH_3 (un-ionized ammonia). Ammonia is removed from the wastewater in the activated sludge process by biological nitrification.

The ECA specifies seasonal concentration and loading limits for TAN with the lower limits applying from June through October and the higher from November through May. The process performed well throughout 2018 as both concentration and loading remained below the ECA limits. Further, effluent TAN concentration reflected optimal process performance, consistently remaining below the ECA seasonal objective concentrations. The maximum effluent TAN concentration detected in a single sample during 2018 was 8.29 mg/L in February.

Un-ionized ammonia is the form most toxic to aquatic life. The un-ionized fraction depends on the pH and temperature of the sample and typically represents a very small portion of the total ammonia concentration. The maximum un-ionized ammonia concentration observed in a single sample in 2018 was 0.36 mg/L, well below the federal limit of 1.25 mg/L.

Table 5 - Nitrogen, pH, and Temperature Data

Month	TKN		TAN		NH_3	pH	Temp.
	Raw Sewage (mg/L)	Final Eff. (mg/L)	Final Eff. (mg/L)	Final Eff. (kg/d)	Final Eff. (mg/L)	Final Eff.	Final Eff. (C)
January	25.6	3.6	2.38	4.41	0.01	7.2	7.9
February	26.4	5.7	4.57	9.13	0.02	7.3	7.4
March	23.8	4.8	3.09	4.48	0.01	7.2	7.8
April	17.7	2.1	1.15	2.76	0.01	7.3	8.5
May	22.9	1.2	0.14	0.18	0.01	7.2	13.4
June	22.8	1.9	0.83	1.44	0.01	7.3	16.6
July	40.3	2.6	1.61	1.24	0.08	7.1	21.3
August	35.0	1.0	0.09	0.08	0.01	7.3	22.1
September	39.1	1.0	0.09	0.08	0.01	7.1	21.1
October	31.8	0.9	0.08	0.08	0.01	7.3	17.1
November	25.0	1.0	0.07	0.11	0.01	7.4	11.3
December	22.6	0.8	0.05	0.09	0.01	7.4	9.5
Yr. Avg.	27.7	2.2	1.18	2.01	0.02	7.3	13.7
Max. Mo. Avg.			4.57	9.13	0.08		
ECA Limit*			8.0 / 16.0	19.2 / 38.4			
ECA OBJ			5.0 / 12.0			6.5 – 8.5	
EC Limit**					1.25	6.0 - 9.5	

* seasonal limits for TAN - lower applies Jun thru Oct, higher Nov thru May

** Environment Canada - Federal Wastewater Effluent Regulation limit

Reported values are monthly averages calculated from weekly (or more frequent) samples

Temperature and pH: Based on measurements of effluent samples taken through 2018, pH remained within the ECA prescribed range of 6.0 to 9.5 and within the more stringent objective range of 6.5 to 8.5. Discrete pH measurements recorded in 2018 ranged from 6.8 to 7.5. Effluent temperature varied seasonally with a month average low of 7.4 C in February and a maximum month average of 22.1 C in August.

Disinfection: Ultraviolet light (UV) is used to disinfect the treated effluent prior to discharge to the Bay of Quinte. The performance of the UV disinfection system is verified by bacteriological testing (*Escherichia Coliforms)* of weekly effluent grab samples. Testing results are summarized in Table 6.

Of the 54 samples collected through 2018, *E. Coli.* was not detected in over 80 percent. The geometric mean value for all months was well below both the ECA limit of 200 CFU/100 mL and the objective of 100 CFU/100mL.

Table 6 – Effluent *E. Coli.* (CFU/100mL) Monthly Geomean and Maximum Values

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Geometric mean	**1.0**	**1.2**	**1.7**	**1.2**	**1.0**	**4.5**	**1**	**1**	**2.1**	**1**	**1.3**	**1**
Maximum	<1	<2	<2	2	1	1800	<1	<1	18	1	2	<1
# of samples	5	4	4	4	5	5	5	5	4	5	4	4

NOTES:

ECA limit is 200 CFU/100mL based on monthly geometric mean

ECA objective is 100 CFU/100mL based on monthly geometric mean

Geometric mean calculated using the method detection limit (MDL) for results reported as 0 or <MDL.

Acute Lethality: The ECA requires that effluent from the facility is non-acutely lethal to Rainbow Trout and *Daphnia Magna.* Monitoring is required annually. During 2018, a sample was collected on June 26th. Non-acute lethality was reported for both test organisms.

Septage: The septage receiving station was utilized during the months of January through June and in November and December. The ECA requires collection and testing

of weekly samples when the station is in use. Table 7 provides a summary of volume and analytical quality of septage received in 2018.

A total of 212 loads were received in 2018, each averaging 9.8 m^3. Septage is high in strength, with BOD_5 and TSS averaging 2701 mg/L and 10256 mg/L respectively. Nutrient loading from septage is also significant. Total phosphorus averaged 64 mg/L while TKN averaged 365 mg/L.

Table 7 - Septage Receiving Station

Month	Weeks in use	Loads	Month Volume	BOD_5	TSS	TP	TKN
	#	#	m^3	mg/L	mg/L	mg/L	mg/L
January	5	43	468	1265	2540	37	244
February	4	41	383	2490	2470	53	247
March	4	35	317	2763	11515	61	307
April	3	16	146	2420	18133	85	535
May	3	9	109	2488	9267	29	328
June	2	3	39	3990	16500	127	580
October	1	4	28	1820	1650	18	121
November	4	35	371	5060	16688	102	597
December	3	26	223	2013	13540	61	323
Total	29	212	2084				
Average				2701	10256	64	365

4 Biosolids

Excess biological sludge wasted from the extended aeration activated sludge process is directed to an aerobic digester for further stabilization. Following the digestion process the thickened liquid biosolids can either be de-watered in geo-synthetic bags or loaded into a tanker for transport off-site. Ultimately, the de-watered or liquid biosolids are beneficially applied to approved agricultural land during summer and autumn. Land applied biosolids improves the moisture retaining capacity of soil and also adds valuable macro and micro nutrients needed for crop growth.

Production: Waste activated sludge (WAS) from the extended aeration process is pumped to the aerobic digester in batches several times each day based on a programmed

volume and time sequence. Operators adjust the rate of wasting based on mixed liquor suspended solids and extended aeration solids retention time.

When the digester is full, the blower is turned off and the sludge is given time to settle. After approximately 24 hours of settling, the clear supernatant above the settled sludge is decanted back through the treatment process, creating more room in the digester for additional WAS.

During 2018, a total of 7,535 m^3 of WAS was transferred to the digester. Supernatant decanted from the digester totaled 4,386 m^3, and there was 585 m^3 additional volume in the digester at the end of the year resulting in a total year volume of digested sludge of:

7535 m^3 – 4386 m^3+585 m^3 = 3734 m^3.

Waste sludge and volumes pumped or decanted from the digester are summarized in Table 8.

Table 8 - Aerobic Digester Operation

Month	WAS m^3	Decant m^3	Liquid Hauled m^3	De-watered m^3	De-watered Hauled tonne
January	480	524	0	0	0
February	544	154	0	659	0
March	526	154	0	0	0
April	517	570	0	0	0
May	615	416	0	0	0
June	692	0	1080	0	0
July	578	303	0	0	0
August	645	665	0	0	107
September	715	519	0	0	0
October	756	375	680	0	0
November	621	0	480	0	0
December	846	706	0	0	0
Total	7535	4386	2240	1475	107

Biosolids Land Application: During 2018, 2240 m^3 of liquid biosolids were hauled from the Deseronto aerobic digester and applied to approved agricultural land by Terratec Environmental. Dates of application were: June 1st, 11th – 13th, October 25th and 26th, and November 7th and 8th.

The aerobic digester is not large enough to store all of the biosolids produced at the Deseronto facility in a given year, therefore additional storage capacity is provided in geo-synthetic bags. The large porous synthetic bags, with the assistance of polymer addition, are designed to retain solids while allowing water to pass through. An additional 107 tonnes of de-watered biosolids from one of two geo-synthetic bags was similarly land applied on August 15th. The total volume of digester sludge pumped to the de-watering process in 2018 was 659 m^3. One full de-watering bag is scheduled for land application in 2019 while one empty bag is available for winter storage.

Analytical Quality of Processed Biosolids: Samples of liquid biosolids collected during May and October were analyzed for solids, nutrients, regulated metals, and pathogens to confirm suitability for agricultural use. De-watered biosolids were also sampled and similarly tested in May and July. Summary tables showing the analytical quality of the biosolids and details of the application sites are provided below.

Table 9 - Deseronto WPCP Digester Biosolids – Analytical Results

Metals	**Maximum Permitted Metal Concentrations (mg/kg)**	**Avg. Metal Concentration in Biosolids (mg/kg)**
Arsenic	170	5.59
Cadmium	34	1.31
Cobalt	340	1.69
Chromium	2800	14.90
Copper	1700	643.65
Lead	1100	23.4
Mercury	11	0.680
Molybdenum	94	4.69
Nickel	420	13.97
Selenium	34	<3.76
Zinc	4200	654.2
Nutrients		**(mg/L)**
Total Phosphorus		863
Ammonia + Ammonium		4.9
Nitrate+Nitrite		47.2
Total Kjheldahl Nitrogen		1440
Potassium		50.2
Bacteria / Total Solids		**CFU/g / (mg/L)**
E. Coli.	2,000,000	561,700
Total Solids (mg/L)		26,675

Table 10 - Deseronto WPCP De-watered Biosolids – Analytical Results

Metals	**Maximum Permitted Metal Concentrations (mg/kg)**	**Avg. Metal Concentration in Biosolids (mg/kg)**
Arsenic	170	2.8
Cadmium	34	0.72
Cobalt	340	2.0
Chromium	2800	19.7
Copper	1700	577.5
Lead	1100	16.3
Mercury	11	0.472
Molybdenum	94	4.7
Nickel	420	17.3
Selenium	34	3.7
Zinc	4200	465
Nutrients		**(mg/kg)**
Total Phosphorus		36,450
Ammonia + Ammonium		6,723
Nitrate+Nitrite		39.8
Total Kjheldahl Nitrogen		46,600
Potassium		1,517
Bacteria / Total Solids		**CFU/g / (mg/kg)**
E. Coli.	2000000	215
Total Solids (mg/L)		114,400

Future Production / Land Application: A similar volume of biosolids production is anticipated for 2019. Land application will include both liquid and de-watered material.

Nineteen sites totaling over 470 hectares are approved to receive Deseronto biosolids through to the end of 2022.

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Table 11 - 2017 Deseronto WPCP Biosolids – Land Application Rates

Date	NASM #	Farm/Source	Location	Field #	Total Volume (m^3)	Total Tonnes (t)	Area Spread (ha)	Application Method
Jun 1	22998	**Soudant - Home** Digester Liquid	Lots 7-8, Conc.8, Stone Mills Township, Sheffield Ward	9	240		2.48	Surface – Standing Crop
Jun 11, 12	22391	**Haskett - Gray** Digester Liquid	Lot 25-27, Conc.4, Town of Greater Napanee, Fredericksburgh Ward	3	520		4.17	Incorporated
Jun 12, 13				5	320		2.58	
Aug 15	22413	**Vos - Andy - Brennan** Digested – De-watered	Lot 29, Conc. 4, City of Belleville, Thurlow Ward	3		107.25	4.96	Incorporated
Oct 25, 26	23434	**Prins - Watson** Digester Liquid	Lot 15-16, Conc. 5, City of Belleville, Thurlow Ward	3	680		5.80	Incorporated
Nov 7, 8	22998	**Soudant - Home** Digester Liquid	Lots 7-8, Conc.8, Stone Mills Township, Sheffield Ward	9E	320		2.48	Surface – Standing Crop
Nov 8	23053	**Soudant - Stevens** Digester Liquid	Lots 9, Conc.8, Stone Mills Township, Sheffield Ward	6	160		1.61	Surface – Standing Crop
				TOTAL	**2240**	**107.25**	**24.08**	

4 Operational Problems / Equipment Maintenance

Operational Problems: The treatment process performed very well throughout 2018 in spite of periodic high flow rates due to inflow during extreme weather events. Compliance was maintained through varying flow conditions.

The performance of the biosolids de-watering process continued to be problematic. One geo-synthetic bag was opened and transferred to agricultural land in August. The solid content of the de-watered material was marginally suitable for transporting by dump trailer at approximately 11.5% solids.

An alternate polymer has been jar tested with promising results. The new polymer will be used on the full scale system 2019 with the goal of improved dewatering to optimize storage space and decrease transportation costs.

Maintenance / Upgrading:

Routine maintenance is summarized below.

Equipment	**Action – Frequency (D-daily, W-weekly, M-monthly, Q-quarterly, S-semi-annually, A-annually**
Wet Well	Inspect (D), flush (W)
Raw Sewage Pumps	Inspect, check current, flow, VFD temp (D)
Screen	Inspect, check run-time, cycles (D), change auto greaser (A)
De-watering screw	Inspect, check run-time, cycles (D)
Grit tank	Inspect, check blower current (D)
Grit augers	Inspect, check current, cycles (D)
Chain and Flight	Inspect (D), grease (A)
Aeration Tanks and Clarifiers	Drain, clean and inspect equipment in one of two extended air trains (A)
RAS pumps	Check flow, current, VFD temp, speed (D)
Blowers	Inspect, check current, VFD temp, pressures (D), change oil, check belts/filters (A)
Tertiary Filter	Check headloss and backwash cycles (D), change media (as needed)
UV lights	Check intensity, lamp hours, (D), clean quartz sleeves (S), change bulbs (as req'd)
Flow Meters	Calibration (A)
Lift Stations	Check pump operation, station condition, and pump hours (W)X2, check pump currents (Q)X2, clean station wet well as needed.

Non-routine maintenance / upgrades included the following:

- Coolant was replaced in all three raw sewage pumps.
- A mechanical seal was replaced in one of three raw sewage pumps.
- One of four return activated sludge pumps was removed from service for mechanical repair.

- One of the two septage receiving pumps has been removed from service with a replacement pump on order.
- The aging First Street Lift Station was completely refurbished with new controls, pumps, lighting and ventilation.
- A new pre-cast building was installed at the First Street Lift Station to contain the new ground level controls.
- New electrical services were installed at the First and Fourth Street Lift Stations.
- Manual transfer switches were installed at the First and Fourth Street Lift Stations to accommodate emergency power supply from a new portable diesel general.

5 Complaints

There were no reported complaints regarding the operation of the wastewater treatment plant, wastewater collection system, or biosolids program during 2018.

Appendix A – 2019 Deseronto Wastewater Treatment Plant Monitoring Schedule

Sample Description	JAN					FEB				MAR				APR					MAY				JUN				JUL					AUG				SEP				OCT					NOV				DEC			
	02-Jan-19	08-Jan-19	15-Jan-19	22-Jan-19	29-Jan-19	05-Feb-19	12-Feb-19	19-Feb-19	26-Feb-19	05-Mar-19	12-Mar-19	19-Mar-19	26-Mar-19	02-Apr-19	09-Apr-19	16-Apr-19	23-Apr-19	30-Apr-19	07-May-19	14-May-19	21-May-19	28-May-19	04-Jun-19	11-Jun-19	18-Jun-19	25-Jun-19	02-Jul-19	09-Jul-19	16-Jul-19	23-Jul-19	30-Jul-19	06-Aug-19	13-Aug-19	20-Aug-19	27-Aug-19	03-Sep-19	10-Sep-19	17-Sep-19	24-Sep-19	01-Oct-19	08-Oct-19	15-Oct-19	22-Oct-19	29-Oct-19	05-Nov-19	12-Nov-19	19-Nov-19	26-Nov-19	03-Dec-19	10-Dec-19	17-Dec-19	26-Dec-19
WEEKLY																																																		
Raw Sewage																																																		
Secondary Effluent																																																	
Final Effluent																																																	
Final Effluent (Bact)																																																	
Septage Receving																																																	
MONTHLY																																																	
Waste Clarifier																																																	
Biosolids (if req'd)																																																	
ANNUAL																						ANNUAL																											

Sampling Notes	**WEEKLY**	**MONTHLY**	**ANNUALLY**	**OTHER** (min. 2 sples, within 2 mths prior to land application)
	Raw Sewage: BOD_5, TSS, TP, TKN	Waste Clar.: TSS	Final Eff.: Acute Toxicity	GeoTube or Digester:
	Final Eff: $CBOD_5$, TSS, TP, TKN, TAN, NH_3, pH			-11 Heavy Metals
	Final Eff.: *Escherichia Coliforms*			-Total Solids, Total Volatile Solids
	S. Eff.: $CBOD_5$, TSS, TP, TKN			-NH_3, NH_4, NO_3, NO_2, TKN
				-TP, K
	Septage Receiving (if used):			*-Escherichia Coliforms*
	BOD_5, TSS, TP, TKN			